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Claims

1. A personal watercraft comprising:

a hull including a bottom hull and a top deck secured over the bottom hull,  
the hull defining an engine compartment sized to contain an internal combustion

5 engine for powering a jet propulsion unit, the jet propulsion unit including a  
steerable water discharge nozzle, the top deck having a raised, longitudinally  
extending seat adapted to accommodate an operator in straddle fashion,

the bottom hull including a center keel having a keel surface and a  
centerline,

10 wherein the bottom hull has a longitudinal portion lying between a front  
limit and a rear limit,

in which the keel has a keel angle that is smaller at the rear limit than at  
the front limit.

15 2. A personal watercraft as in claim 1, in which the keel angle at a location  
along the centerline is defined as the angle formed between the keel bottom  
surface at the centerline and two keel bottom surface locations which are  
disposed transversely away from the centerline at a location of greatest  
downward slope on the keel surface.

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3. A personal watercraft as in claim 2, in which the keel portion lies within the  
middle third of the personal watercraft length.

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4. A personal watercraft as in claim 1, in which the personal watercraft includes a rear-most extent, in which the keel portion rear begins within about 3 ½ feet forward of the rear-most extent, and in which the front limit is located at least about 4 ½ feet forward of the keel rear limit.

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5. A personal watercraft as in claim 1, in which the personal watercraft includes a rear-most extent, in which the keel portion rear begins within about 4 feet forward of the rear-most extent, and in which the front limit is located at least about 3 feet forward of the keel rear limit.

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6. A personal watercraft as in claim 1, in which the personal watercraft includes a rear-most extent, in which the keel portion rear begins within about 4 feet forward of the rear-most extent, and in which the front limit is located at least about 5 feet forward of the keel rear limit.

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7. A personal watercraft as in claim 1, in which the personal watercraft includes a rear-most extent, in which the keel portion rear begins within about 5 feet forward of the rear-most extent, and in which the front limit is located at least about 2 feet forward of the keel rear limit.

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8. A jet-propelled personal watercraft comprising:  
a hull including a bottom hull and a top deck secured over the bottom hull,  
the hull defining an engine compartment sized to contain an internal combustion

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engine for powering a jet propulsion unit, the jet propulsion unit including a steerable water discharge nozzle, the top deck having a raised, longitudinally extending seat adapted to accommodate an operator in straddle fashion; and

a center keel portion of the hull having a surface, a length, 2 sides and a plurality of locations along the keel length through which a transverse cross-section can be taken through the keel, wherein the transverse cross-section has a point on each keel surface side having a greatest downward slope, wherein there exists in the keel portion a keel section having a length over which the greatest downward slope increases from front to rear over the section length.

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9. A personal watercraft hull as in claim 8, in which the center keel portion is integrally formed with the hull.

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10. A personal watercraft hull as in claim 8, in which the hull has a length, and in which the keel section lies within the middle third of the hull length.

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11. A personal watercraft hull as in claim 8, in which the hull has a length, and in which the keel section lies at least within 15 percent of either side of the middle of the hull length.

12. A personal watercraft hull as in claim 8, in which the hull has a length, and in which the keel section lies at least within 10 percent of either side of the middle of the hull length.

13. A personal watercraft as in claim 8, in which the personal watercraft includes a jet pump, in which the keel section begins about 1 foot forward of the jet pump and has a length of at least 2 feet.

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14. A personal watercraft as in claim 8, in which the center keel has a maximum vertical downward slope at a location 3 feet to rearward of the hull front-most extent that is less than the maximum vertical downward slope at a location 4 feet forward the hull rear-most extent.

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15. A personal watercraft as in claim 8, in which the center keel has a maximum vertical downward slope at a location 3 feet to rearward of the hull front-most extent that is less than the maximum vertical downward slope at a location 3 feet forward the hull rear-most extent.

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16. A personal watercraft as in claim 8, further comprising a keel trough having a trough depth on each side of the keel,

wherein there exists a keel section having a length over which the trough depth increases from front to rear over the section length.

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17. A personal watercraft hull comprising:

a center keel portion of the hull having a surface, a length, and a plurality of locations along the keel length through which a transverse cross-section can be taken through the hull;

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a keel trough having a trough depth on each side of the keel;

wherein there exists a keel section of the center keel portion having a length over which the trough depth increases from front to rear over the section length.

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18. A personal watercraft hull as in claim 17, wherein there can be defined a keel trough boundary that is defined as a line described by a rigid member having a first end, a second end, and length, that is lain horizontally and transversely to cross the hull keel centerline at a first end and to contact the keel  
10 near the first end, followed by raising the rigid member second end upward while maintaining keel contact with the rigid member first end, until the rigid member contacts the hull at a second contact location,

wherein the trough depth is defined as the distance from the trough boundary to the hull surface.

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19. A personal watercraft hull as in claim 17, wherein the trough boundary has a length, in which the trough depth is a normal depth defined as the largest normal distance over the trough boundary length from the trough boundary to the  
hull surface.

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20. A personal watercraft hull as in claim 17, in which the trough depth is a vertical depth, defined as the vertical distance from a trough boundary mid-point to the hull surface.

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21. A personal watercraft hull as in claim 17, in which the hull has a length, and in which the center keel section lies within the middle third of the hull length.

22. A personal watercraft hull as in claim 17, in which the hull includes a jet pump, in which the center keel portion begins about 1 ½ feet forward of the jet pump and has a length of at least three feet.

23. A personal watercraft hull as in claim 17, in which the hull includes a jet pump, in which the center keel portion begins within about 2 feet forward of the jet pump and has a length of at least three feet.

24. A personal watercraft hull as in claim 17, in which the hull has a front-most extent and a rear-most extent, in which the center keel has a maximum vertical downward slope 3 feet rearward of the hull front-most extent that is less than the maximum vertical downward slope 4 feet forward the hull rear-most extent.

25. A personal watercraft hull as in claim 17, in which the keel has a side angle from vertical that decreases to form a more acute and more vertical angle from front to rear over the section length.

26. A personal watercraft hull comprising:

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a center keel portion of the hull having a surface, a length, and a plurality of locations along the keel length through which a transverse cross-section can be taken through the hull;

a keel trough having a trough depth on each side of the keel;

5        wherein there exists a keel section of the center keel portion having a length over which the trough depth increases from front to rear over the section length.

27.    A personal watercraft hull as in claim 26, in which the keel section length  
10    is at least about 2 feet long.

28.    A personal watercraft hull as in claim 26, in which the keel section length  
is at least about 1 foot long.

15    29.    A personal watercraft hull as in claim 26, in which the keel section length  
is at least about 3 feet long

30.    A personal watercraft hull as in claim 26, in which the keel section length  
is at least about 2 feet long

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31.    A personal watercraft hull including a rear tunnel, the hull comprising:

a center keel portion, wherein there exists a keel section of the center keel portion having concave areas located in either side of the keel portion, wherein

the keel section has a length over which the concavities get deeper toward the rear.

32. A personal watercraft hull as in claim 31, in which the keel section length  
5 is at least about 2 feet long.

33. A personal watercraft hull as in claim 31, in which the keel section length  
is at least about 1 foot long.

10 34. A personal watercraft hull as in claim 31, in which the keel has a side  
angle from vertical and the side angle gets smaller over the length of the section.